

CLAIMS

What is claimed is:

1. A computer implemented method comprising:

first translating a first plurality of representations of a plurality of parts of a plurality of sub-assemblies of an mechanical design assembly to a second plurality of representations of the parts of the sub-assemblies of the mechanical design assembly; and

thereafter, translating one or more assembly constraints of said assembly by correspondingly constraining geometric entities within said translated representations that are counterpart to geometric entities of said pre-translation representation constrained by said one or more assembly constraints.

2. The method of claim 1, wherein said translating of first representations of said parts of said sub-assemblies comprises tracking correspondence between said first and said second plurality of representations of said parts and sub-assemblies of the mechanical design assembly during said translation.

3. The method of claim 1, wherein said translating of one or more assembly constraints comprises identifying said counterpart geometric entities within said translated representation.

4. The method of claim 3, wherein said identifying comprises identifying said geometric entities within said pre-translated representations constrained by said one or more assembly constraints;

4 selecting a plurality of spatial sampling points for each of said identified
5 geometry within said pre-translation representations, constrained by said one or
6 more assembly constraints, and
7 for each of said identified geometry within said pre-translation
8 representations, applying its selected spatial sampling points to geometric entities
9 within said translated representations to identify its counterpart geometry/geometric
10 entities.

1 5. The method of claim 1, wherein said one or more assembly constraints
2 comprise a selected one of a mating constraint and a flush constraint constraining
3 on at least a first and a second sub-assembly/part of said first plurality of sub-
4 assemblies/parts.

1 6. The method of claim 1, wherein said one or more assembly constraints
2 comprise a selected one of an angle constraint and a rotational constraint
3 constraining on at least a first and a second sub-assembly/part of said first plurality
4 of sub-assemblies/parts.

1 7. An article of manufacture comprising:
2 a recordable medium having recorded thereon a plurality of machine
3 executable programming instructions designed to program a host machine to enable
4 the host machine to
5 first translate a first plurality of representations of a plurality of parts of a
6 plurality of sub-assemblies of a mechanical design assembly to a second
7 plurality of representations of the parts of the sub-assemblies of the
8 mechanical design assembly; and

9 thereafter, translate one or more assembly constraints of said assembly
10 by correspondingly constraining geometric entities within the translated
11 representations that are counterpart to geometric entities within the pre-
12 translation representation constrained by said one or more assembly
13 constraints.

1 8. The article of manufacture of claim 7, wherein said programming instructions
2 further enable the host machine to track correspondence between said first and said
3 second plurality of representations of said parts and sub-assemblies of the
4 mechanical design assembly during said translation.

1 9. The article of claim 7, wherein said programming instructions enable the host
2 machine to identify said counterpart geometric entities within said translated
3 representation.

1 10. The article of claim 9, wherein said programming instructions enable the host
2 machine to
3 identify said geometric entities within said pre-translated representations
4 constrained by said one or more assembly constraints;
5 select a plurality of spatial sampling points for each of said identified
6 geometry within said pre-translation representations, constrained by said one or
7 more assembly constraints, and
8 for each of said identified geometry within said pre-translation
9 representations, apply its selected spatial sampling points to geometric entities
10 within said translated representations to identify its counterpart geometry/geometric
11 entities.

1 11. A computer system comprising:
2 a storage medium having stored therein a plurality of programming
3 instructions to first translate a first plurality of representations of a plurality of parts of
4 a plurality of sub-assemblies of a mechanical design assembly to a second plurality
5 of representations of the parts of the sub-assemblies of the mechanical design
6 assembly, and thereafter, translate one or more assembly constraints of said
7 assembly by correspondingly constraining geometric entities within the translated
8 representations that are counterpart to geometric entities of the pre-translation
9 representations constrained by said one or more assembly constraints; and
10 a processor coupled to the storage medium to execute the programming
11 instructions.

1 12. The computer system of claim 11, wherein said programming instructions are
2 further designed to track correspondence between said first and said second
3 plurality of representations of said parts and sub-assemblies of the mechanical
4 design assembly during said translation.

1 13. The computer system of claim 11, wherein said programming instructions are
2 designed to identify said counterpart geometric entities within said translated
3 representation.

1 14. The computer system of claim 13, wherein said programming instructions are
2 designed to
3 identify said geometric entities within said pre-translated representations
4 constrained by said one or more assembly constraints;

5 select a plurality of spatial sampling points for each of said identified
6 geometry within said pre-translation representations, constrained by said one or
7 more assembly constraints, and
8 for each of said identified geometry within said pre-translation
9 representations, apply its selected spatial sampling points to geometric entities
10 within said translated representations to identify its counterpart geometry/geometric
11 entities.

1 15. A method comprising:
2 determining geometric entities within a plurality of translated representations
3 of sub-assemblies/parts of a mechanical design assembly that are corresponding to
4 geometric entities within a plurality of pre-translation representations of the sub-
5 assemblies/parts of the mechanical design assembly, constrained by one or more
6 assembly constraints of the mechanical design assembly; and
7 correspondingly constraining the determined counterpart geometric entities
8 within the translated representations of the sub-assemblies/parts to effectively
9 translate said one or more assembly constraints of the mechanical design assembly.

1 16. The method of claim 15, wherein said determining comprises
2 identifying said geometric entities within said pre-translated representations
3 constrained by said one or more assembly constraints;
4 selecting a plurality of spatial sampling points for each of said identified
5 geometry within said pre-translation representations, constrained by said one or
6 more assembly constraints, and
7 for each of said identified geometry within said pre-translation
8 representations, applying its selected spatial sampling points to geometric entities

9 within said translated representations to identify its counterpart geometry/geometric
10 entities.

1 17. An article of manufacture comprising:
2 a recordable medium having recorded thereon a plurality of machine
3 executable programming instructions designed to program a host machine to
4 enable the host machine to
5 determine geometric entities within a plurality of translated
6 representations of sub-assemblies/parts of a mechanical design assembly
7 that are corresponding to geometric entities within a plurality of pre-
8 translation representations of the sub-assemblies/parts of the mechanical
9 design assembly, constrained by one or more assembly constraints of the
10 mechanical design assembly; and
11 correspondingly constraining the determined counterpart geometric
12 entities of the plurality of translated representations of the sub-
13 assemblies/parts to effectively translate said one or more assembly
14 constraints of the mechanical design assembly.

1 18. The article of claim 17, wherein said programming instructions enable the
2 host machine to
3 identify said geometric entities within said pre-translated representations
4 constrained by said one or more assembly constraints;
5 select a plurality of spatial sampling points for each of said identified
6 geometry within said pre-translation representations, constrained by said one or
7 more assembly constraints, and
8 for each of said identified geometry within said pre-translation
9 representations, apply its selected spatial sampling points to geometric entities

10 within said translated representations to identify its counterpart geometry/geometric
11 entities.

1 19. A computer system comprising:
2 a storage medium having therein a plurality of programming instructions to
3 determine geometric entities within a plurality of translated representations of sub-
4 assemblies/parts of a mechanical design assembly that are corresponding to
5 geometric entities within a plurality of pre-translation representations of the sub-
6 assemblies/parts of the mechanical design assembly, constrained by one or more
7 assembly constraints of the mechanical design assembly, and correspondingly
8 constraining the determined counterpart geometric entities of the plurality of
9 translated representations of the sub-assemblies/parts to effectively translate said
10 one or more assembly constraints of the mechanical design assembly; and
11 a processor coupled to the storage medium to execute the program
12 instructions.

1 20. The computer system of claim 19, wherein said programming instructions are
2 designed to
3 identify said geometric entities within said pre-translated representations
4 constrained by said one or more assembly constraints;
5 select a plurality of spatial sampling points for each of said identified
6 geometry within said pre-translation representations, constrained by said one or
7 more assembly constraints, and
8 for each of said identified geometry within said pre-translation
9 representations, apply its selected spatial sampling points to geometric entities
10 within said translated representations to identify its counterpart geometry/geometric
11 entities.